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CLAIMS

[Claim(s)]

[Claim 1] The prepaid card for games characterized by having prepared the magnetic paint film which records the above-mentioned balance data on one field in the prepaid card for games with which updating record of the balance data corresponding to the balance of imprest is carried out, and preparing the two-dimensional bar code which coded predetermined data in the field of another side according to an advance of a game medium.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the prepaid card for games used in order to receive the loan of game media, such as a game ball (pachinko ball) and coin for games.

[0002]

[Description of the Prior Art] The magnetic stripe is prepared in the prepaid card for games called the former, for example, a common card etc., and magnetic recording of the balance of imprest, a security code, the issue store code, etc. was carried out to this magnetic stripe.

[0003]

[Problem(s) to be Solved by the Invention] However, since the record by such magnetic stripe was easily rewritable, improvement in the drag force, i.e., the security, to malfeasances, such as an alteration, was called for.

[0004]

[Means for Solving the Problem] As this The means for solving a technical problem, the prepaid card for games of this invention is characterized by having prepared the magnetic paint film which records the above-mentioned balance data on one field, and preparing the two-dimensional bar code which coded predetermined data in the field of another side in the prepaid card for games with which updating record of the balance data corresponding to the balance of imprest is carried out according to an advance of a game medium.

[0005]

[Function] In the prepaid card for games of the above-mentioned configuration, balance data are recorded on one field and the two-dimensional bar code which coded predetermined data is prepared in the field of another side. A two-dimensional bar code has many amounts of storing of the property to data, for example, can code and record directions and various kinds of data tables of a card.

[0006] Since the alteration of this security code is very difficult when a security code is stored during record of this two-dimensional bar code, it improves, the drag force, i.e., the security, to a malfeasance of the prepaid card for games.

[0007]

[Example] Next, the example of this invention is explained. As shown in drawing 1, the alphabetic character of "PARLOR CARD" designs to surface 10a of the prepaid card 10 for games of this example (only henceforth a card), and is printed, and the part showing a top alphabetic character "P" serves as the two-dimensional bar code field 12. It is the field where the two-dimensional bar code field 12 is formed by the detail with the border line 14 of the outside of the "P" character, and the border line 16 of the shape of a circle by the side of the interior.

[0008] On the other hand, as shown in drawing 2, the magnetic paint film is prepared in rear-face 10b of a card 10, and printing of an alphabetic character, a graphic form, etc. is not performed.

Moreover, as shown in drawing 3, these data 22 and the end mark 24 containing the start mark 18, a data length 20, and parity data 22a are magnetically written in rear-face 10b of this card 10.

[0009] With reference to the mimetic diagram shown in drawing 4, the structure of a two-dimensional bar code 30 is explained. The code line L which meets the field to which a two-

dimensional bar code 30 is formed with a closed curve 32 at flow direction Q is recorded over two or more steps, and an edge is displayed by the start code mark 34 and the end code mark 36 always [the / physical]. Moreover, the data size mark 38 is recorded following the start code mark 34, the end code mark 36 is adjoined and the parity data 40 are recorded. Between this data size mark 38 - the parity data 40 is made into the data area 42 for recording various kinds of data, and the code corresponding to desired data is recorded here. However, the effective data is not recorded on all the data areas 42, and the effective data is recorded between the specific start code thru/or the end code (effective-data range). Therefore, the separating part serves as invalid-data range from the above-mentioned effective-data range, and the data recorded on this range are an invalid data. In addition, in drawing 4 , the display of the code recorded on the data area 42 is omitted.

[0010] The code explained according to drawing 4 is recorded on the two-dimensional bar code field 12 in the "P" character drawn on surface 10a of the card 10 of this example, and the publishing agency data which specify card 10 issue-origin, the dealer data which pinpoint the dealer of a card 10, the face-value data which specify the face amount of a card 10 are coded by the data area 42, and it is recorded on it as an effective data. In addition, although security data can be constituted only from these data, the security data which became independent further are also recordable. Moreover, a two-dimensional bar code 30 has many amounts of storing of the property to data, for example, can code and record directions and various kinds of data tables of a card.

[0011] Since security data are stored and it is during record of a two-dimensional bar code 30 with this card 10, the alteration of security data is very difficult and it is very high, the drag force, i.e., the security, to a malfeasance of the prepaid card 10 for games.

[0012] With this card 10, the alphabetic character containing the "P" character with which the two-dimensional bar code 30 is recorded on surface 10a is printed, a magnetic paint film is prepared in rear-face 10b, and data can be written in magnetically. Since the two-dimensional bar code field 12 should just be formed with a closed curve like border lines 14 and 16, its degree of freedom of a configuration is very large, and it can carry out two-dimensional bar code 30 the very thing to a part of design of a card 10 like this example.

[0013] Moreover, since surface 10a is given to the magnetic paint film and the field where both are separate, as for a possibility of interfering mutually, a two-dimensional bar code 30 and rear-face 10b do not have it. Therefore, also at this point, the degree of freedom of the printing range of a two-dimensional bar code 30 or the printing approach is large, and selection width of face, such as the quality of ink, printing thickness, and color, becomes very large. For this reason, when it also becomes possible to print a two-dimensional bar code 30 and a card 10 is sold, for example by sensible-heat printing, the technique of printing a two-dimensional bar code 30 is also employable.

[0014] Furthermore, since two-dimensional bar code side and rear-face 10b is [surface 10a] a magnetic-recording side as mentioned above, the magnetic head for magnetic-recording read and writing etc. does not contact surface 10a. Therefore, since there is no adhesion of the dirt to surface 10a by the magnetic head etc. and it is not necessary to take such dirt into consideration, recording density of a two-dimensional bar code 30 can be made high.

[0015] Next, about the equipment which uses the card 10 which becomes an above-mentioned configuration, the case of a pachinko parlor is mentioned as an example and explained. As shown in drawing 5 , the ball rental machine 50 of two or more card systems currently installed between the pachinko machines 76 (not shown in drawing 5) of a pachinko parlor is connected to the hole management computer 56 through the repeater 52 and the optical cable 54. Moreover, the repeater 60 is connected to the repeater 52 through the optical cable 58, and the card vending machine 62 and the card use tariff management equipment 64 which all contain a microcomputer are connected to the repeater 60. Furthermore, card use tariff management equipment 64 is connectable with the host computer which is not illustrated through the telephone line 66.

[0016] As shown in drawing 6 , the insertion opening 70 of the shape of a slit for inserting and discharging a card 10 is carrying out opening to the ball rental machine 50. Moreover, the balance indicator panel 72 for displaying the balance of the prepaid amount of money currently recorded

on the card 10 on a ball rental machine 50 is installed above the insertion opening 70, and the return carbon button 74 for directing discharge of a card 10 to a ball rental machine 50 under the insertion opening 70 is installed.

[0017] On the other hand, the pachinko machine 76 which adjoins a ball rental machine 50 and this supports one to one mutually, and is connected through electric wiring (illustration abbreviation). The ball lending carbon button 80 for directing the loan of the pachinko ball of the number of setup to a ball rental machine 50 is formed in the upper saucer 78 of the pachinko machine 76. Moreover, the ball lending numeral machine 124 (not shown in drawing 6) which displays the number of loan balls by which a setup was carried out [above-mentioned] on the upper saucer 78 adjoins the ball lending carbon button 80, and is formed.

[0018] Drawing 7 is the sectional view of a ball rental machine 50, and, similarly drawing 7 (b) by the side of DAB is a sectional view by the side of DAA to the center line DA of the insertion opening 70 with which drawing 7 (a) is shown in drawing 6. As shown in this drawing 7, the card path 82 which stands in a row to the insertion opening 70 is established in the interior of a ball rental machine 50. Along with the wall surfaces 84 and 86 of this card path 82, the delivery belts 88 and 90 of the pair which can reciprocate in the advance direction F and the retreat direction R carry out phase opposite, and are arranged. These delivery belts 88 and 90 can be made to ** the card 10 put while it was mutual along a path 82 approximately. In addition, in order to bypass the CCD line sensor 92 currently installed in the wall surface 86 in order that the delivery belt 90 may read the two-dimensional bar code 30 currently printed by surface 10a of a card 10, the part exposed to a wall surface 86 is divided into anterior part 90a and posterior part 90b.

[0019] Moreover, the magnetic data reading head 94 for reading the magnetic data currently recorded on the magnetic paint film of rear-face 10b of a card 10 on a wall surface 84 is installed in the insertion opening 70 side, and the magnetic data write head 96 for writing in magnetic data is installed in the back side.

[0020] Furthermore, although illustration is omitted, when the insertion sensor is installed in the insertion opening 70 neighborhood and the point of a card 10 passes the insertion opening 70, an insertion sensor is the configuration of detecting insertion of a card 10. As shown in drawing 8, the Rhine-like LED100 grade used as the light source at the time of reading a two-dimensional bar code 30 with the delivery device 98 and the CCD line sensor 92 which drive the delivery belts 88 and 90 is prepared in the ball rental machine 50. The shape 100 of Rhine LED is connected to the two-dimensional bar code decoder (only henceforth a decoder) 104 through the amplifier 102. It is the configuration that the detecting signal of an insertion sensor is inputted into the two-dimensional bar code decoder 104, and when there is an input of this detecting signal, it is the configuration that amplifier 102 is set to ON by the signal from a decoder 104, and the shape 100 of Rhine LED emits light.

[0021] The frame memory 106 is built in the decoder 104, and the two-dimensional bar code 30 read with the CCD line sensor 92 can be memorized to a frame memory 106. Furthermore, a decoder 104 decodes the two-dimensional bar code 30 memorized by the frame memory 106, and can output the data. The output of this decoder 104 is the configuration of it being inputted into the data input/output interface 108, and being further inputted into CPU112 through a bi-directional bus 110. The data input/output interface 108 is connected to the hole management computer 56 through the above-mentioned repeater 52.

[0022] Moreover, ROM114 and RAM116 are connected to CPU112 through the bi-directional bus 110, data processing which read the program beforehand stored in ROM114, and followed this program can be performed, and the data memorized by making RAM114 memorize the data inputted into CPU112, the data calculated by CPU112 and RAM114 can be read.

[0023] Furthermore, the output interface 118 and the input interface 120 are connected to CPU112. The balance indicator panel 72, the ball lending numeral machine 124, the delivery device 98, and the magnetic data write head 96 are connected to the output interface 118, and CPU112 can control the display of the ball lending numeral machine 124, the drive of the delivery device 98, and the store of the magnetic data write head 96 in balance indicator-panel 72 list. Similarly, the ball lending carbon button 80, the return carbon button 74, and the magnetic data reading head 94 are connected to the input interface 120, and CPU112 can carry out read in of the signal

from these ball lending carbon button 80, the return carbon button 74, and the magnetic data reading head 94.

[0024] Next, ball lending is depended and carried out to sale of the card 10 by above-mentioned equipment, and a card 10, and total processing of ball lending data is explained. According to the prepaid card selling routine shown in introduction and drawing 9, sale of the card 10 performed with the card vending machine 62 is explained.

[0025] First, the purchase amount of money is inputted by the card purchaser (S1100). Since the card 10 is classified into the face values (for example, 1,000 yen, 3,000 yen, 5,000 yen, 10,000 etc. yen, etc.) set up beforehand, it depends the input of the purchase amount of money in here from the face-value class shown in the display panel (illustration abbreviation) of the card vending machine 62 on selection.

[0026] Then, the card vending machine 62 picks out the card 10 of the face value corresponding to the purchase amount of money by which selection was made [above-mentioned] from a stock (S1200). Next, the two-dimensional bar code 30 of the card 10 taken [above-mentioned] out picking is read (S1300). In addition, ball lending is mentioned later and carried out and read in processing of a two-dimensional bar code 30 is stated to a detail in explanation of actuation.

[0027] Next, the card vending machine 62 encodes magnetic data by the magnetic data encoding subroutine using a two-dimensional bar code 30 (S1400). As shown in drawing 10, in a magnetic data encoding subroutine, the numeric value (henceforth code value) based on a two-dimensional bar code 30 is computed by carrying out data processing of the decode key beforehand remembered to be the value of the two-dimensional bar code 30 read by the above S1300 according to a decryption logic program (S1410). Then, the card vending machine 62 inputs the face amount of a card 10 into an encryption logic program (S1420). Furthermore, the registration number of the store which pinpoints the pachinko parlor in which the card vending machine 62 is installed is inputted and inputted into an encryption logic program (S1430). Next, the card vending machine 62 uses as a cryptographic key code value computed by S1410, and the balance (face amount) of a card 10 and the registration number of a store which carried out [above-mentioned] the input are enciphered (S1440). Then, the balance and the registration number which were enciphered as the code value computed by S1410 are compounded, (S1450) and this subroutine are ended as magnetic data, and a return is carried out to a prepaid card selling routine.

[0028] If a return is carried out to a prepaid card selling routine, the magnetic data which carried out [above-mentioned] creation will be written in rear-face 10b of a card 10 as magnetic recording (S1500). Next, sales data, such as a face amount of a card 10 and selling time, is recorded (S1600). Finally, the card vending machine 62 discharges a card 10 (S1700), and ends processing by this routine. In addition, the sales data recorded by S1600 is transmitted to the hole management computer 56 and a host computer.

[0029] Next, ball lending is performed and carried out with a ball rental machine 50, and actuation is explained. If a card 10 is inserted in the insertion opening 70 and the detecting signal from an insertion sensor is inputted, the decoder 104 of a ball rental machine 50 will send a signal to an amplifier 102, will make the shape 100 of Rhine LED emit light, and will start the decoding routine of the two-dimensional bar code shown in drawing 11. That is, processing which followed the decoding routine of a two-dimensional bar code for every insertion of a card 10 will be performed. Moreover, the detecting signal from an insertion sensor is inputted also into CPU112 through the input interface 120, and if CPU112 has the input of this detecting signal, it will process working the delivery device 98 etc.

[0030] If the decoding routine of a two-dimensional bar code 30 is started as shown in drawing 11, after a decoder 104 quantizes the output of the CCD line sensor 92, it will be written in a frame memory 106 as image data (S2100). Next, a decoder 104 pinpoints the closed curve area more than a predetermined area from the image data in a frame memory 106 (S2200). That is, a decoder 104 pinpoints the two-dimensional bar code field 12 in image data. Then, a decoder 104 extracts the direction of a data list of closed curve area (= flow direction Q) (S2300).

[0031] Then, a decoder 104 decodes the two-dimensional bar code 30 of closed curve area (S2400). Under the present circumstances, the read mistake by the CCD line sensor 92 etc. is

checked by collating the data size from the start code mark 34 to the end code mark 36 with the data size mark 38, and collating with the parity data 40 the numeric value computed from the data from the start code mark 34 to the end code mark 36. Temporarily, if there is an inequality of data size or parity data, the processing after the read actuation by the CCD line sensor 92 is repeated, when the count of a repeat turns into more than a predetermined number, processing by this routine will be interrupted, and it will output to CPU112. CPU112 makes the delivery device 98 work according to this that this card 10 should be discharged from the insertion opening 70.

[0032] If the decode processing by S2400 is made normally, the effective-data range is pinpointed by 104 progressing to a decoder S2500 and extracting a start code and an end code. Furthermore, a decoder 104 outputs from the next data of the start code extracted by S2500 to the data in front of an end code to CPU112 (S2600). That is, the data of the effective-data range are outputted.

[0033] Next, the prepaid card ball lending processing which carries out ball lending and is performed by CPU112 in actuation is explained with reference to drawing 12. In addition, this prepaid card ball lending routine is repeatedly performed as time-sharing lump processing for every predetermined timing. If this routine will be ended, it will shift to other processings, if CPU112 judges whether the prepaid card 10 for games was inserted and does not have insertion of a card 10 and there is insertion of a card 10 as shown in drawing 12, it will progress to the following S3200 (S3100).

[0034] In S3200, CPU112 reads the magnetic data of a card 10 by the magnetic data reading head. Next, the two-dimensional bar code 30 outputted from the decoder 104 as mentioned above is read (S3300). Then, code value is computed by the same data processing as above-mentioned S1410 (S3400). Furthermore, code record of the magnetic data read by S3200 is decoded by using this code value as a decryption key, and the amount of money (balance) and the registration number of a store are computed (S3500).

[0035] Next, it judges whether CPU112 has a proper card 10 by collating with a card 10 whether the code value by which encryption record is carried out, and the code value computed at the above-mentioned step 3300 are mutually in agreement (S3600). Here, if inharmonious (unsuitable forward), it will progress to S3700, and inaccurate card processing is performed, and this routine is ended. On the other hand, if code value is in agreement by collating of S3600 (proper), it will progress to S3800.

[0036] In S3800, CPU112 displays the balance based on the magnetic data read into the balance indicator panel 72 the account of a top. CPU112 waits for directions of the card return by the ball lending or the return carbon button 74 by the ball lending carbon button 80 being pushed being pushed in S3900.

[0037] If ball lending is directed here, CPU112 directs discharge of the pachinko ball of a predetermined number in the ball discharge device which is not illustrated (S4000). Thereby, ball lending by the ball rental machine 50 is performed. Next, CPU112 enciphers code value as the ability of the new balance which reduced the amount of money equivalent to the number of balls lent out from the balance based on above-mentioned magnetic data to be set to above-mentioned S1440 as a cryptographic key similarly (S4100). Then, CPU112 writes the magnetic data which enciphered this new balance in a card 10 (S4200). Furthermore, CPU112 outputs code value and the ball lending amount of money to the hole management computer 56 and card use tariff management equipment 64 through a repeater 52, and recurs them to S3900 (S4300). Again, if ball lending is directed by S3900, processing of S4000-S4300 will be repeated.

[0038] On the other hand, when card return is directed by S3900, CPU112 works the delivery device 98 that a card 10 should be discharged from the insertion opening 70, and ends this routine (S4400). In a ball rental machine 50, ball lending actuation of using a card 10 as mentioned above is performed.

[0039] Next, the total of the ball lending data based on card use tariff management equipment 64 is explained with reference to drawing 13. If ball lending data are outputted from a ball rental machine 50 as mentioned above as shown in drawing 13, as for card use tariff management equipment 64, ball lending data will be received (S5100). Card use tariff management equipment 64 totals the ball lending amount of money according to code value (S5200). Furthermore, card use

tariff management equipment 64 will be transmitted to a computer, if the ball lending amount of money which totaled by S5200 is dried for every fixed period (S5300).

[0040] The total of the ball lending according to sale of a card 10 and a card 10 as mentioned above and ball lending data is performed. As mentioned above, the alteration of the magnetic recording of a card 10 is checked because use the numeric value (code value) based on a two-dimensional bar code 30 as a cryptographic key, the drag force, i.e., the security, to a malfeasance of this prepaid card 10 for games, it enciphers the balance of a card 10, and the registration number of a store, records them as magnetic data and collates the code value in magnetic data, and the code value of a two-dimensional bar code 30 with a very high top on the occasion of the ball lending by the card 10. For this reason, the security of the ball lending actuation by the card 10 also becomes very high.

[0041] As mentioned above, although this invention was explained according to the example, it cannot be overemphasized that it can carry out variously in the range which this invention is not limited to such an example and does not deviate from the summary of this invention. For example, although the two-dimensional bar code is recorded into the alphabetic character of "P" in this example, a record section can be considered not only as a part of alphabetic character itself and alphabetic character but as various designs. Moreover, since what is necessary is just to be able to process a two-dimensional bar code as binarization data to a reading side (for example, decoder 104), it is not necessary to restrict it to monochrome, and it can be considered as various coloring. When based on coloring, it is possible to carry out binarization with the difference in a color, or to carry out binarization by the strength of a color etc.

[0042]

[Effect of the Invention] As explained above, according to the prepaid card for games of this invention, it improves, the drag force, i.e., the security, to a malfeasance of the prepaid card for games.

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TECHNICAL FIELD

[Industrial Application] This invention relates to the prepaid card for games used in order to receive the loan of game media, such as a game ball (pachinko ball) and coin for games.

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PRIOR ART

[Description of the Prior Art] The magnetic stripe is prepared in the prepaid card for games called the former, for example, a common card etc., and magnetic recording of the balance of imprest, a security code, the issue store code, etc. was carried out to this magnetic stripe.

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EFFECT OF THE INVENTION

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since the record by such magnetic stripe was easily rewritable, improvement in the drag force, i.e., the security, to malfeasances, such as an alteration, was called for.

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MEANS

[Means for Solving the Problem] As this The means for solving a technical problem, the prepaid card for games of this invention is characterized by having prepared the magnetic paint film which records the above-mentioned balance data on one field, and preparing the two-dimensional bar code which coded predetermined data in the field of another side in the prepaid card for games with which updating record of the balance data corresponding to the balance of imprest is carried out according to an advance of a game medium.

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OPERATION

[Function] In the prepaid card for games of the above-mentioned configuration, balance data are recorded on one field and the two-dimensional bar code which coded predetermined data is prepared in the field of another side. A two-dimensional bar code has many amounts of storing of the property to data, for example, can code and record directions and various kinds of data tables of a card.

[0006] Since the alteration of this security code is very difficult when a security code is stored during record of this two-dimensional bar code, it improves, the drag force, i.e., the security, to a malfeasance of the prepaid card for games.

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EXAMPLE

[Example] Next, the example of this invention is explained. As shown in drawing 1, the alphabetic character of "PARLOR CARD" designs to surface 10a of the prepaid card 10 for games of this example (only henceforth a card), and is printed, and the part showing a top alphabetic character "P" serves as the two-dimensional bar code field 12. It is the field where the two-dimensional bar code field 12 is formed by the detail with the border line 14 of the outside of the "P" character, and the border line 16 of the shape of a circle by the side of the interior.

[0008] On the other hand, as shown in drawing 2, the magnetic paint film is prepared in rear-face 10b of a card 10, and printing of an alphabetic character, a graphic form, etc. is not performed. Moreover, as shown in drawing 3, these data 22 and the end mark 24 containing the start mark 18, a data length 20, and parity data 22a are magnetically written in rear-face 10b of this card 10.

[0009] With reference to the mimetic diagram shown in drawing 4, the structure of a two-dimensional bar code 30 is explained. The code line L which meets the field to which a two-dimensional bar code 30 is formed with a closed curve 32 at flow direction Q is recorded over two or more steps, and an edge is displayed by the start code mark 34 and the end code mark 36 always [the / physical]. Moreover, the data size mark 38 is recorded following the start code mark 34, the end code mark 36 is adjoined and the parity data 40 are recorded. Between this data size mark 38 - the parity data 40 is made into the data area 42 for recording various kinds of data, and the code corresponding to desired data is recorded here. However, the effective data is not recorded on all the data areas 42, and the effective data is recorded between the specific start code thru/or the end code (effective-data range). Therefore, the separating part serves as invalid-data range from the above-mentioned effective-data range, and the data recorded on this range are an invalid data. In addition, in drawing 4, the display of the code recorded on the data area 42 is omitted.

[0010] The code explained according to drawing 4 is recorded on the two-dimensional bar code field 12 in the "P" character drawn on surface 10a of the card 10 of this example, and the publishing agency data which specify card 10 issue-origin, the dealer data which pinpoint the dealer of a card 10, the face-value data which specify the face amount of a card 10 are coded by the data area 42, and it is recorded on it as an effective data. In addition, although security data can be constituted only from these data, the security data which became independent further are also recordable. Moreover, a two-dimensional bar code 30 has many amounts of storing of the property to data, for example, can code and record directions and various kinds of data tables of a card.

[0011] Since security data are stored and it is during record of a two-dimensional bar code 30 with this card 10, the alteration of security data is very difficult and it is very high, the drag force, i.e., the security, to a malfeasance of the prepaid card 10 for games.

[0012] With this card 10, the alphabetic character containing the "P" character with which the two-dimensional bar code 30 is recorded on surface 10a is printed, a magnetic paint film is prepared in rear-face 10b, and data can be written in magnetically. Since the two-dimensional bar code field 12 should just be formed with a closed curve like border lines 14 and 16, its degree of freedom of a configuration is very large, and it can carry out two-dimensional bar code 30 the very thing to a part of design of a card 10 like this example.

[0013] Moreover, since surface 10a is given to the magnetic paint film and the field where both are separate, as for a possibility of interfering mutually, a two-dimensional bar code 30 and rear-face 10b do not have it. Therefore, also at this point, the degree of freedom of the printing range of a two-dimensional bar code 30 or the printing approach is large, and selection width of face, such as the quality of ink, printing thickness, and color, becomes very large. For this reason, when it also becomes possible to print a two-dimensional bar code 30 and a card 10 is sold, for example by sensible-heat printing, the technique of printing a two-dimensional bar code 30 is also employable.

[0014] Furthermore, since two-dimensional bar code side and rear-face 10b is [surface 10a] a magnetic-recording side as mentioned above, the magnetic head for magnetic-recording read and writing etc. does not contact surface 10a. Therefore, since there is no adhesion of the dirt to surface 10a by the magnetic head etc. and it is not necessary to take such dirt into consideration, recording density of a two-dimensional bar code 30 can be made high.

[0015] Next, about the equipment which uses the card 10 which becomes an above-mentioned configuration, the case of a pachinko parlor is mentioned as an example and explained. As shown in drawing 5, the ball rental machine 50 of two or more card systems currently installed between the pachinko machines 76 (not shown in drawing 5) of a pachinko parlor is connected to the hole management computer 56 through the repeater 52 and the optical cable 54. Moreover, the repeater 60 is connected to the repeater 52 through the optical cable 58, and the card vending machine 62 and the card use tariff management equipment 64 which all contain a microcomputer are connected to the repeater 60. Furthermore, card use tariff management equipment 64 is connectable with the host computer which is not illustrated through the telephone line 66.

[0016] As shown in drawing 6, the insertion opening 70 of the shape of a slit for inserting and discharging a card 10 is carrying out opening to the ball rental machine 50. Moreover, the balance indicator panel 72 for displaying the balance of the prepaid amount of money currently recorded on the card 10 on a ball rental machine 50 is installed above the insertion opening 70, and the return carbon button 74 for directing discharge of a card 10 to a ball rental machine 50 under the insertion opening 70 is installed.

[0017] On the other hand, the pachinko machine 76 which adjoins a ball rental machine 50 and this supports one to one mutually, and is connected through electric wiring (illustration abbreviation). The ball lending carbon button 80 for directing the loan of the pachinko ball of the number of setup to a ball rental machine 50 is formed in the upper saucer 78 of the pachinko machine 76. Moreover, the ball lending numeral machine 124 (not shown in drawing 6) which displays the number of loan balls by which a setup was carried out [above-mentioned] on the upper saucer 78 adjoins the ball lending carbon button 80, and is formed.

[0018] Drawing 7 is the sectional view of a ball rental machine 50, and, similarly drawing 7 (b) by the side of DAB is a sectional view by the side of DAA to the center line DA of the insertion opening 70 with which drawing 7 (a) is shown in drawing 6. As shown in this drawing 7, the card path 82 which stands in a row to the insertion opening 70 is established in the interior of a ball rental machine 50. Along with the wall surfaces 84 and 86 of this card path 82, the delivery belts 88 and 90 of the pair which can reciprocate in the advance direction F and the retreat direction R carry out phase opposite, and are arranged. These delivery belts 88 and 90 can be made to ** the card 10 put while it was mutual along a path 82 approximately. In addition, in order to bypass the CCD line sensor 92 currently installed in the wall surface 86 in order that the delivery belt 90 may read the two-dimensional bar code 30 currently printed by surface 10a of a card 10, the part exposed to a wall surface 86 is divided into anterior part 90a and posterior part 90b.

[0019] Moreover, the magnetic data reading head 94 for reading the magnetic data currently recorded on the magnetic paint film of rear-face 10b of a card 10 on a wall surface 84 is installed in the insertion opening 70 side, and the magnetic data write head 96 for writing in magnetic data is installed in the back side.

[0020] Furthermore, although illustration is omitted, when the insertion sensor is installed in the insertion opening 70 neighborhood and the point of a card 10 passes the insertion opening 70, an insertion sensor is the configuration of detecting insertion of a card 10. As shown in drawing 8, the Rhine-like LED100 grade used as the light source at the time of reading a two-dimensional

bar code 30 with the delivery device 98 and the CCD line sensor 92 which drive the delivery belts 88 and 90 is prepared in the ball rental machine 50. The shape 100 of Rhine LED is connected to the two-dimensional bar code decoder (only henceforth a decoder) 104 through the amplifier 102. It is the configuration that the detecting signal of an insertion sensor is inputted into the two-dimensional bar code decoder 104, and when there is an input of this detecting signal, it is the configuration that amplifier 102 is set to ON by the signal from a decoder 104, and the shape 100 of Rhine LED emits light.

[0021] The frame memory 106 is built in the decoder 104, and the two-dimensional bar code 30 read with the CCD line sensor 92 can be memorized to a frame memory 106. Furthermore, a decoder 104 decodes the two-dimensional bar code 30 memorized by the frame memory 106, and can output the data. The output of this decoder 104 is the configuration of it being inputted into the data input/output interface 108, and being further inputted into CPU112 through a bi-directional bus 110. The data input/output interface 108 is connected to the hole management computer 56 through the above-mentioned repeater 52.

[0022] Moreover, ROM114 and RAM116 are connected to CPU112 through the bi-directional bus 110, data processing which read the program beforehand stored in ROM114, and followed this program can be performed, and the data memorized by making RAM114 memorize the data inputted into CPU112, the data calculated by CPU112 and RAM114 can be read.

[0023] Furthermore, the output interface 118 and the input interface 120 are connected to CPU112. The balance indicator panel 72, the ball lending numeral machine 124, the delivery device 98, and the magnetic data write head 96 are connected to the output interface 118, and CPU112 can control the display of the ball lending numeral machine 124, the drive of the delivery device 98, and the store of the magnetic data write head 96 in balance indicator-panel 72 list. Similarly, the ball lending carbon button 80, the return carbon button 74, and the magnetic data reading head 94 are connected to the input interface 120, and CPU112 can carry out read in of the signal from these ball lending carbon button 80, the return carbon button 74, and the magnetic data reading head 94.

[0024] Next, ball lending is depended and carried out to sale of the card 10 by above-mentioned equipment, and a card 10, and total processing of ball lending data is explained. According to the prepaid card selling routine shown in introduction and drawing 9, sale of the card 10 performed with the card vending machine 62 is explained.

[0025] First, the purchase amount of money is inputted by the card purchaser (S1100). Since the card 10 is classified into the face values (for example, 1,000 yen, 3,000 yen, 5,000 yen, 10,000 etc. yen, etc.) set up beforehand, it depends the input of the purchase amount of money in here from the face-value class shown in the display panel (illustration abbreviation) of the card vending machine 62 on selection.

[0026] Then, the card vending machine 62 picks out the card 10 of the face value corresponding to the purchase amount of money by which selection was made [above-mentioned] from a stock (S1200). Next, the two-dimensional bar code 30 of the card 10 taken [above-mentioned] out picking is read (S1300). In addition, ball lending is mentioned later and carried out and read in processing of a two-dimensional bar code 30 is stated to a detail in explanation of actuation.

[0027] Next, the card vending machine 62 encodes magnetic data by the magnetic data encoding subroutine using a two-dimensional bar code 30 (S1400). As shown in drawing 10, in a magnetic data encoding subroutine, the numeric value (henceforth code value) based on a two-dimensional bar code 30 is computed by carrying out data processing of the decode key beforehand remembered to be the value of the two-dimensional bar code 30 read by the above S1300 according to a decryption logic program (S1410). Then, the card vending machine 62 inputs the face amount of a card 10 into an encryption logic program (S1420). Furthermore, the registration number of the store which pinpoints the pachinko parlor in which the card vending machine 62 is installed is inputted and inputted into an encryption logic program (S1430). Next, the card vending machine 62 uses as a cryptographic key code value computed by S1410, and the balance (face amount) of a card 10 and the registration number of a store which carried out [above-mentioned] the input are enciphered (S1440). Then, the balance and the registration number which were enciphered as the code value computed by S1410 are compounded, (S1450) and this

subroutine are ended as magnetic data, and a return is carried out to a prepaid card selling routine.

[0028] If a return is carried out to a prepaid card selling routine, the magnetic data which carried out [above-mentioned] creation will be written in rear-face 10b of a card 10 as magnetic recording (S1500). Next, sales data, such as a face amount of a card 10 and selling time, is recorded (S1600). Finally, the card vending machine 62 discharges a card 10 (S1700), and ends processing by this routine. In addition, the sales data recorded by S1600 is transmitted to the hole management computer 56 and a host computer.

[0029] Next, ball lending is performed and carried out with a ball rental machine 50, and actuation is explained. If a card 10 is inserted in the insertion opening 70 and the detecting signal from an insertion sensor is inputted, the decoder 104 of a ball rental machine 50 will send a signal to an amplifier 102, will make the shape 100 of Rhine LED emit light, and will start the decoding routine of the two-dimensional bar code shown in drawing 11 . That is, processing which followed the decoding routine of a two-dimensional bar code for every insertion of a card 10 will be performed. Moreover, the detecting signal from an insertion sensor is inputted also into CPU112 through the input interface 120, and if CPU112 has the input of this detecting signal, it will process working the delivery device 98 etc.

[0030] If the decoding routine of a two-dimensional bar code 30 is started as shown in drawing 11 , after a decoder 104 quantizes the output of the CCD line sensor 92, it will be written in a frame memory 106 as image data (S2100). Next, a decoder 104 pinpoints the closed curve area more than a predetermined area from the image data in a frame memory 106 (S2200). That is, a decoder 104 pinpoints the two-dimensional bar code field 12 in image data. Then, a decoder 104 extracts the direction of a data list of closed curve area (= flow direction Q) (S2300).

[0031] Then, a decoder 104 decodes the two-dimensional bar code 30 of closed curve area (S2400). Under the present circumstances, the read mistake by the CCD line sensor 92 etc. is checked by collating the data size from the start code mark 34 to the end code mark 36 with the data size mark 38, and collating with the parity data 40 the numeric value computed from the data from the start code mark 34 to the end code mark 36. Temporarily, if there is an inequality of data size or parity data, the processing after the read actuation by the CCD line sensor 92 is repeated, when the count of a repeat turns into more than a predetermined number, processing by this routine will be interrupted, and it will output to CPU112. CPU112 makes the delivery device 98 work according to this that this card 10 should be discharged from the insertion opening 70.

[0032] If the decode processing by S2400 is made normally, the effective-data range is pinpointed by 104 progressing to a decoder S2500 and extracting a start code and an end code. Furthermore, a decoder 104 outputs from the next data of the start code extracted by S2500 to the data in front of an end code to CPU112 (S2600). That is, the data of the effective-data range are outputted.

[0033] Next, the prepaid card ball lending processing which carries out ball lending and is performed by CPU112 in actuation is explained with reference to drawing 12 . In addition, this prepaid card ball lending routine is repeatedly performed as time-sharing lump processing for every predetermined timing. If this routine will be ended, it will shift to other processings, if CPU112 judges whether the prepaid card 10 for games was inserted and does not have insertion of a card 10 and there is insertion of a card 10 as shown in drawing 12 , it will progress to the following S3200 (S3100).

[0034] In S3200, CPU112 reads the magnetic data of a card 10 by the magnetic data reading head. Next, the two-dimensional bar code 30 outputted from the decoder 104 as mentioned above is read (S3300). Then, code value is computed by the same data processing as above-mentioned S1410 (S3400). Furthermore, code record of the magnetic data read by S3200 is decoded by using this code value as a decryption key, and the amount of money (balance) and the registration number of a store are computed (S3500).

[0035] Next, it judges whether CPU112 has a proper card 10 by collating with a card 10 whether the code value by which encryption record is carried out, and the code value computed at the above-mentioned step 3300 are mutually in agreement (S3600). Here, if inharmonious (unsuitable forward), it will progress to S3700, and inaccurate card processing is performed, and this routine

is ended. On the other hand, if code value is in agreement by collating of S3600 (proper), it will progress to S3800.

[0036] In S3800, CPU112 displays the balance based on the magnetic data read into the balance indicator panel 72 the account of a top. CPU112 waits for directions of the card return by the ball lending or the return carbon button 74 by the ball lending carbon button 80 being pushed being pushed in S3900.

[0037] If ball lending is directed here, CPU112 directs discharge of the pachinko ball of a predetermined number in the ball discharge device which is not illustrated (S4000). Thereby, ball lending by the ball rental machine 50 is performed. Next, CPU112 enciphers code value as the ability of the new balance which reduced the amount of money equivalent to the number of balls lent out from the balance based on above-mentioned magnetic data to be set to above-mentioned S1440 as a cryptographic key similarly (S4100). Then, CPU112 writes the magnetic data which enciphered this new balance in a card 10 (S4200). Furthermore, CPU112 outputs code value and the ball lending amount of money to the hole management computer 56 and card use tariff management equipment 64 through a repeater 52, and recurs them to S3900 (S4300). Again, if ball lending is directed by S3900, processing of S4000-S4300 will be repeated.

[0038] On the other hand, when card return is directed by S3900, CPU112 works the delivery device 98 that a card 10 should be discharged from the insertion opening 70, and ends this routine (S4400). In a ball rental machine 50, ball lending actuation of using a card 10 as mentioned above is performed.

[0039] Next, the total of the ball lending data based on card use tariff management equipment 64 is explained with reference to drawing 13. If ball lending data are outputted from a ball rental machine 50 as mentioned above as shown in drawing 13, as for card use tariff management equipment 64, ball lending data will be received (S5100). Card use tariff management equipment 64 totals the ball lending amount of money according to code value (S5200). Furthermore, card use tariff management equipment 64 will be transmitted to a computer, if the ball lending amount of money which totaled by S5200 is dried for every fixed period (S5300).

[0040] The total of the ball lending according to sale of a card 10 and a card 10 as mentioned above and ball lending data is performed. As mentioned above, the alteration of the magnetic recording of a card 10 is checked because use the numeric value (code value) based on a two-dimensional bar code 30 as a cryptographic key, the drag force, i.e., the security, to a malfeasance of this prepaid card 10 for games, it enciphers the balance of a card 10, and the registration number of a store, records them as magnetic data and collates the code value in magnetic data, and the code value of a two-dimensional bar code 30 with a very high top on the occasion of the ball lending by the card 10. For this reason, the security of the ball lending actuation by the card 10 also becomes very high.

[0041] As mentioned above, although this invention was explained according to the example, it cannot be overemphasized that it can carry out variously in the range which this invention is not limited to such an example and does not deviate from the summary of this invention. For example, although the two-dimensional bar code is recorded into the alphabetic character of "P" in this example, a record section can be considered not only as a part of alphabetic character itself and alphabetic character but as various designs. Moreover, since what is necessary is just to be able to process a two-dimensional bar code as binarization data to a reading side (for example, decoder 104), it is not necessary to restrict it to monochrome, and it can be considered as various coloring. When based on coloring, it is possible to carry out binarization with the difference in a color, or to carry out binarization by the strength of a color etc.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the front view of the prepaid card for games of an example.

[Drawing 2] It is the rear view of the prepaid card for games of an example.

[Drawing 3] It is the explanatory view of the magnetic data by the side of the rear face of the prepaid card for games of an example.

[Drawing 4] It is a mimetic diagram explaining the structure of the two-dimensional bar code of the prepaid card for games of an example.

[Drawing 5] It is a block diagram explaining facility configurations, such as a ball rental machine which uses the prepaid card for games of an example.

[Drawing 6] arrangement of the ball rental machine which uses the prepaid card for games of an example, and a pachinko machine is explained -- it is an enlarged drawing a part.

[Drawing 7] the explanatory view of the internal structure of the ball rental machine which uses the prepaid card for games of an example -- it is -- drawing 7 (a) -- the part by the side of DAA of drawing 6 -- a sectional view and drawing 7 (b) -- the part by the side of DAB of drawing 6 -- it is a sectional view.

[Drawing 8] It is a block diagram explaining facility arrangement of the ball rental machine which uses the prepaid card for games of an example.

[Drawing 9] It is the flow chart of the prepaid card selling routine performed with the card vending machine which uses the prepaid card for games of an example.

[Drawing 10] It is the flow chart of the magnetic data encoding subroutine performed with the card vending machine which uses the prepaid card for games of an example.

[Drawing 11] It is the flow chart of the two-dimensional bar code decoding routine by the two-dimensional bar code decoder built in the ball rental machine which uses the prepaid card for games of an example.

[Drawing 12] It is the flow chart of the prepaid card ball lending routine performed with the ball rental machine which uses the prepaid card for games of an example.

[Drawing 13] It is the flow chart of the ball lending data total routine performed with the card use tariff management equipment which receives data from the ball rental machine which uses the prepaid card for games of an example.

[Description of Notations]

10 [... A two-dimensional bar code, 50 / ... A ball rental machine, 62 / ... A card vending machine, 64 / ... Card use tariff management equipment 76 / ... A pachinko machine, 104 / ... A dimension code decoder, 12 / ... CPU.] ... The prepaid card for games, 10a ... A front face, 10b ... A rear face, 30

[Translation done.]

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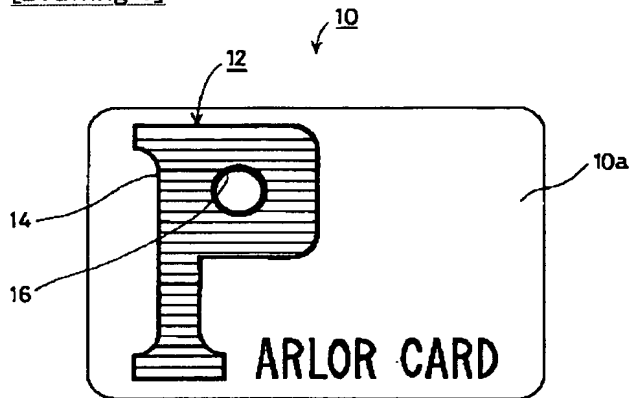
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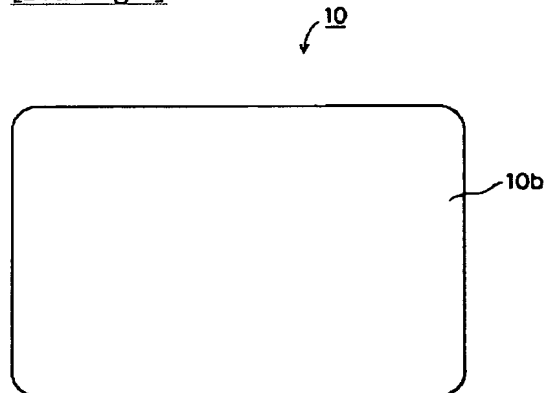
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DRAWINGS

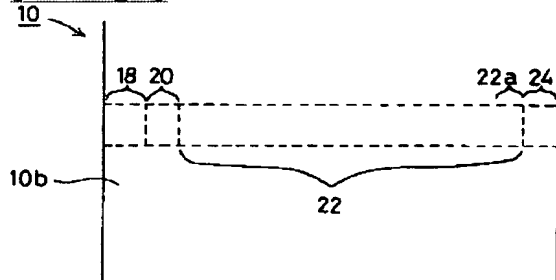
[Drawing 1]



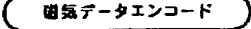
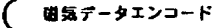
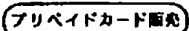
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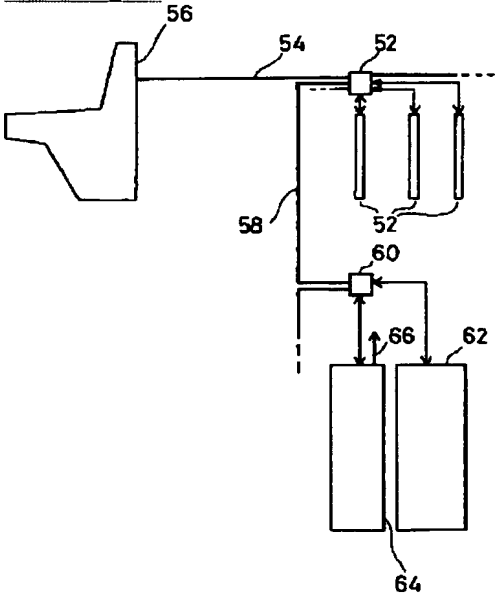
[Drawing 3]



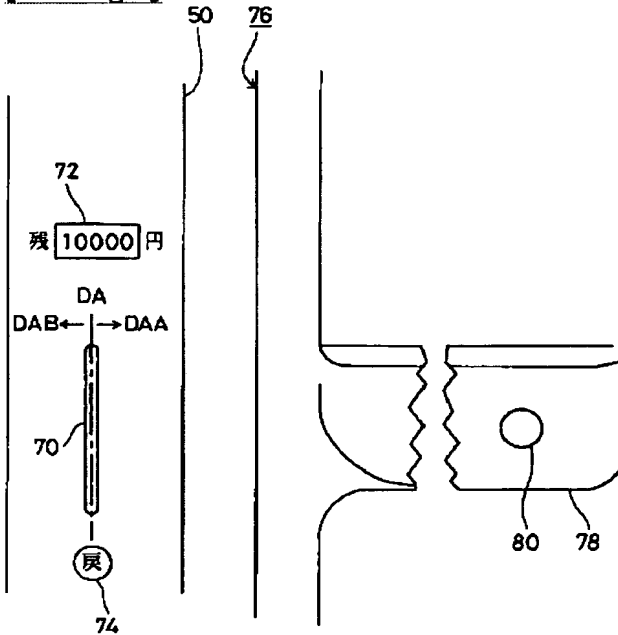
[Drawing 9]



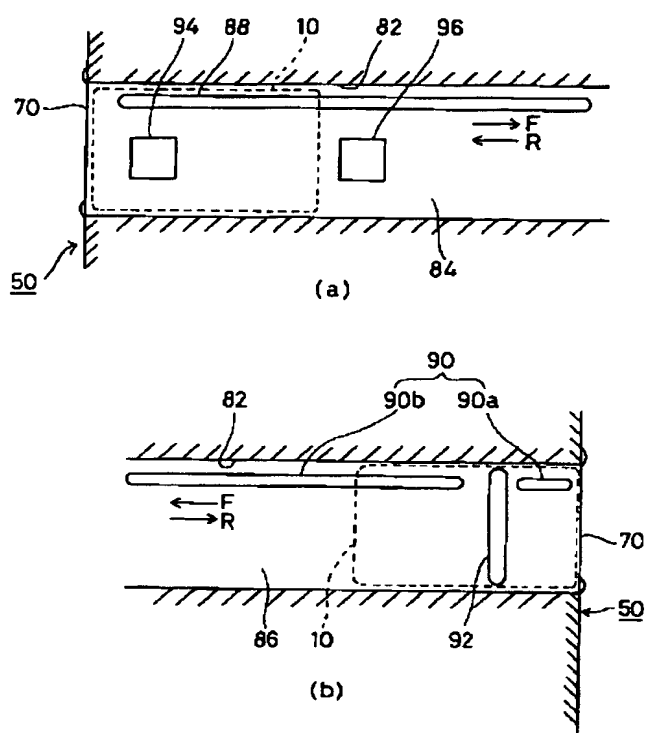
[Drawing 5]



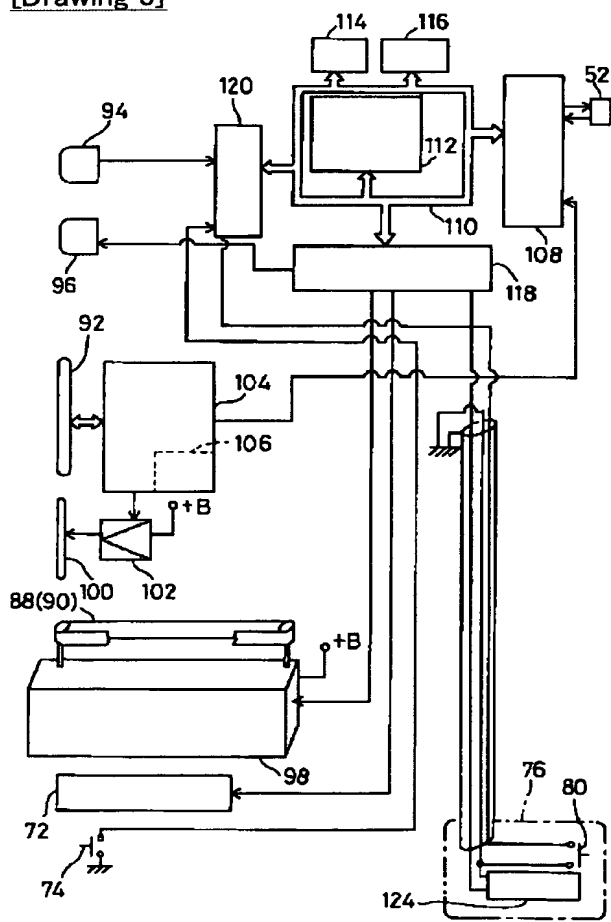
[Drawing 6]



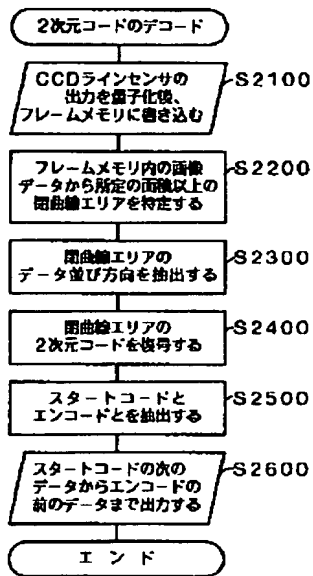
[Drawing 7]



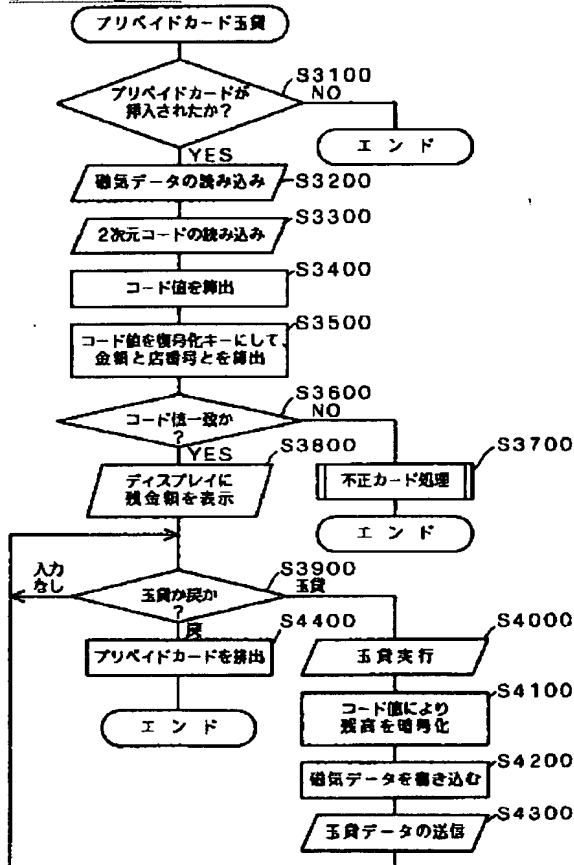
[Drawing 8]



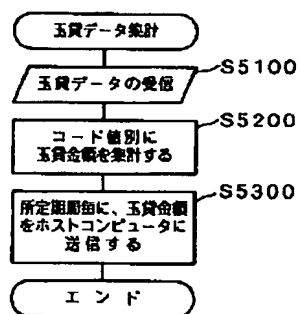
[Drawing 11]



[Drawing 12]



[Drawing 13]



[Translation done.]